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## Letters

## Soviet 'Yellow Rain' Is Real and Devastating

To the Editor:

Gene Lyons's article is full of errors and half-truths.

His assertion that "many chemical and biological weapons are far more poisonous than trichothecenes, easier to make and easier to detect" is pure nonsense. As one of the few scientists in the world with experience in the analysis of trichothecenes, I can assure you that the analysis is quite difficult given the small amounts of sample available.

Dr. James Bamberg of Colorado State, the world's leading authority on trichothecenes, has said (The Times, Nov. 24, 1981) that they could be produced "in your basement or a converted dog kennel." Several years ago, one of my graduate students, with no previous experience in biosynthesis of trichothecenes, succeeded in producing corn contaminated with concentrations of T-2 toxin much greater than those reported for any "yellow rain" sample.

Toxic effects depend on a combination of factors, among them the amount and purity of the toxicant, method of administration (oral, inhalation, injection) and species tested. While there are literature reports on individual, purified trichothecenes administered orally or intraperitoneally to rodents, there are no reports on the effects on man of a mixture of trichothecenes inhaled through the lungs.

In addition, a yellow rain sample we analyzed for ABC News contained a polyethylene glycol emulsifier which could make the mixture much more toxic by facilitating absorption into the lung and skin tissues. And the analyses of yellow rain are by no means complete; other toxic agents (including as yet unidentified trichothecenes) may be present.

For these reasons all of the discussion, contrasting the symptoms reported by the Hmong with the two laboratory accidents (no amounts reported)

and the Mässelson calculations (based on oral administration of one pure trichothecene to rodents) is meaningless to a toxicologist because apples are compared to oranges.

Mr. Lyons would also have us believe that this whole matter is a C.I.A. hoax designed to put us back into the chemical warfare business. If so, why did it take our Government five years to determine the nature of the toxic agents? His insinuation that the samples are fake because one of them was provided by Soldier of Fortune magazine is ludicrous. The C.I.A., in an attempt to make its "hoax" more plausible, would have surely gotten the samples into the hands of a more reliable source.

The writer also attempts to make us believe that Dr. Mirocha, the University of Minnesota plant pathologist who analyzed the State Department samples, is himself suspicious of our Government's charges. Anyone who reads Dr. Mirocha's testimony before the House Subcommittee on Arms Control (Nov. 10) will find that he is quite convinced that chemical warfare agents containing trichothecenes are being used in Southeast Asia.

Finally, the question is raised as to why Moscow is risking all sorts of political damage "for the sake of a relatively trivial internal conflict." One reason is that the remoteness of the area and difficulty of detection make for an ideal environment for field-testing weapons for which NATO has no antidote. I think it is time that we wake up to the danger presented by these weapons before it is too late.

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